Botanical Survey of Proposed Benton Crossing Landfill and Pumice Valley Landfill Expansion Areas, Mono County, California

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SUMMARY

Botanical surveys were conducted in July and August 2001 within proposed expansion areas adjacent to the Benton Crossing and Pumice Valley landfill sites operated by Mono County. No sensitive vegetation types or plant species of concern occur in the Pumice Valley landfill expansion survey area. No sensitive vegetation types occur in the Benton Crossing landfill expansion survey area, however, southwestern portions of the survey area extend down a steep slope nearly to the margin of wetland flats just north of Big Alkali Lake. Expansion of the landfill down this slope could potentially have adverse impacts on the wetland. Two plant species of concern also occur in the Benton Crossing Landfill expansion survey area. Long Valley milk-vetch (*Astragalus johannis-howellii*) and what appears to be Masonic rock cress (*Arabis cobrensis*) were found to occur mainly in the western and southern portions of the survey area. Long Valley milk-vetch is endemic to Mono County and is state-listed as rare. Populations of this species should be avoided. Masonic rock cress is not state or federally-listed, but is considered by the California Native Plant Society as rare, threatened, or endangered in California, but more common elsewhere out of state. Identification of this species needs confirmation because specimens observed in 2001 were dry, with few leaves, and only open fruit with no seeds. The rock cress were generally found to occur in areas with Long Valley milk-vetch; if impacts to the latter species are avoided the rock cress will be avoided also. If expansion at Benton Crossing Landfill occurs only to the north, only a few isolated individuals of Long Valley milk-vetch and Masonic rock cress would be impacted, avoiding potential significant project affects to plant species of concern.

INTRODUCTION

Expansion of existing landfill property boundaries is being proposed by Mono County at their Benton Crossing and Pumice Valley landfill sites. Areas encompassed by expanded boundaries will be used primarily as sources for soil borrow activities and are thus expected to be disturbed to a large degree. Additional activities may include installation of drainage control facilities and/or environmental monitoring devices. The term "expansion" in this report is not intended to mean a lateral expansion of the waste footprint at either site.

Figure 1. Location of the Benton Crossing Landfill expansion survey area and transect spacing.

27.5 ft. wide transects 45-55 ft. wide transects refuse areas, no transects

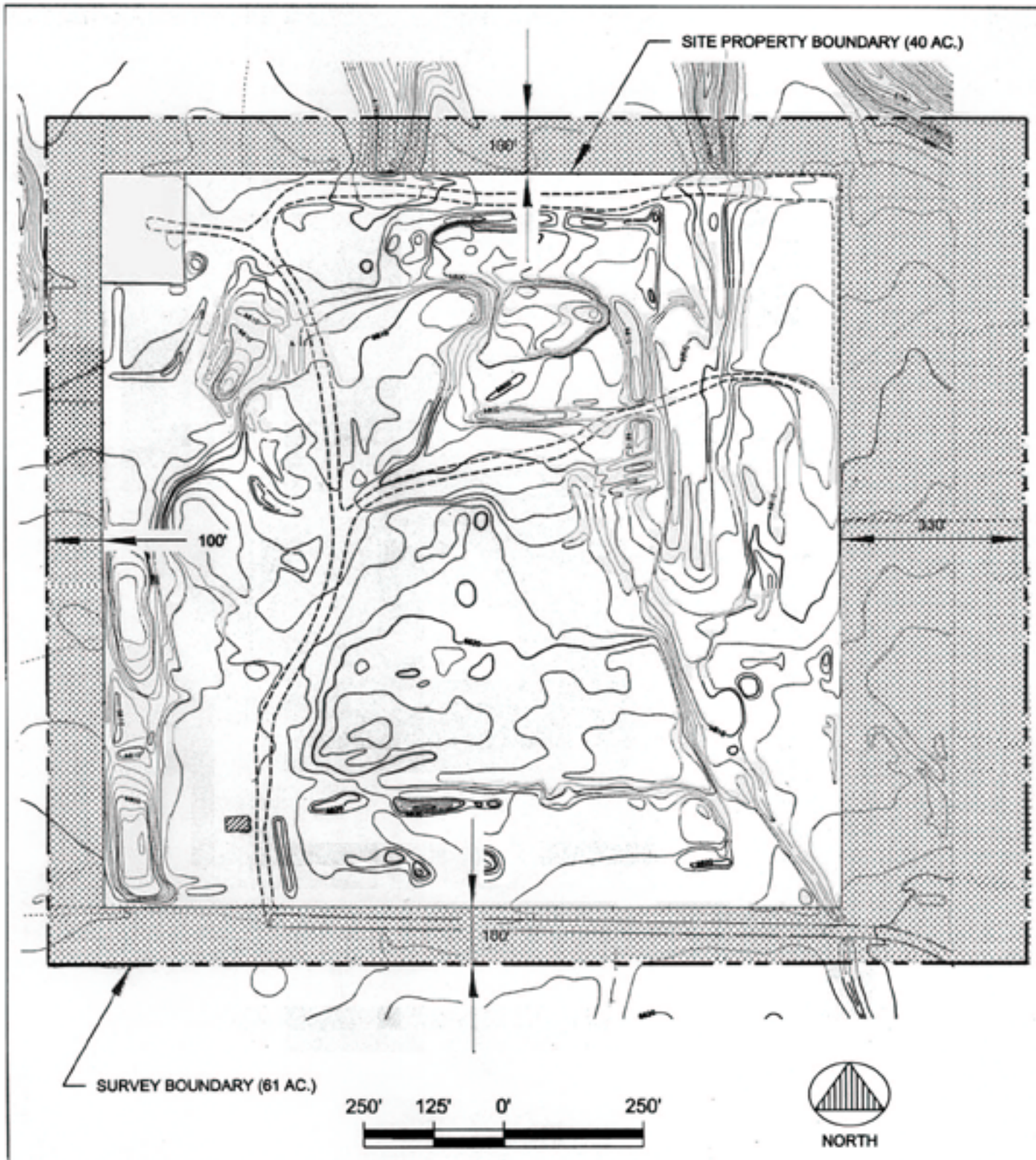

Figure 2. Location of the Pumice Valley Landfill expansion survey area.

50-60 ft. wide transects

The Benton Crossing Landfill is located at an elevation of approximately 6900 feet in Long Valley, approximately 6 miles east-northeast of the Town of Mammoth Lakes and 1.3 miles southwest of the Owens River from Benton Crossing, just north of Big Alkali Lake. Potential expansion areas to the north, northeast, south, and west of the existing fenced landfill area were surveyed at the Benton Crossing Landfill (Figure 1). The Pumice Valley Landfill is located at an elevation of approximately 6800 feet in Pumice Valley, in the Mono Basin, approximately 4.5 miles southeast of Lee Vining and 1.5 miles southwest of Panum Crater. Potential expansion areas on all sides of the existing fenced area were surveyed at the Pumice Valley Landfill (Figure 2). Both existing landfills and both expansion survey areas are located on land owned by the Los Angeles Department of Water and Power. The existing landfills are leased to Mono County for purposes of disposal site operations.

The proposed project is an expansion of the two existing landfill operations. The exact areas of expansion were unknown at the time of this survey, but they are expected to be confined within the survey areas. The objectives of this botanical survey are to provide a description of the vegetation in the survey areas and determine if any rare, threatened, or endangered plant species, or other plant species of concern, or sensitive vegetation types occur there. This information will be used by Mono County in preparation of environmental compliance documents for the project.

METHODS

A list of plant species of concern that appear to have some potential to occur in the landfill survey areas was prepared using data from the California Natural Diversity Data Base (CNDDB 2001), the California Native Plant Society (CNPS 2001), discussion with Bishop Bureau of Land Management (BLM) Botanist Anna Halford, and information in my personal files. A plant was considered a species of concern if it was federally or state-listed or proposed as a rare, threatened, or endangered species; or a CNDDB special plant; or listed by the California Native Plant Society in their inventory of rare and endangered plants of California (CNDDB 2001, CNPS 2001). A species was judged to have some potential for occurring in the survey areas if it was known to occur in the region of the project in a habitat type and at an elevation range thought likely to be found in the survey areas.

Five plant species of concern were determined to have some potential to occur in the survey areas (Table 1). For each of these species, information was gathered on status, distribution, known elevational range, habitat preferences and flowering period. In addition to the sources listed above, this information was gathered from a review of regional floras (Abrams and Ferris 1923-1960, Cronquist et al. 1977, 1989, Munz and Keck 1959, Munz 1968, and Hickman 1993). Identifying features of the species on Table 1 were reviewed before conducting the field surveys.

Athough none of the species of concern are federally listed or proposed for listing, two, Long Valley milk-vetch (*Astragalus johannis-howellii*) and Mono milk-vetch (*Astragalus monoensis* var. *monoensis*), are state-listed as Rare. The other species on Table 1 are CNDDB special plants and listed by CNPS.

Table 1. Plant species of concern with some potential to occur on the Benton Crossing or Pumice Valley landfill expansion survey areas.

Scientific/Common Name (Plant Family)/Life Form	Rank or Status [1] FWS	DFG	NDDB	CNPS	General Distribution and Known Location Nearest To Project Area	Elevational Range, Habitat Preferences and Flowering Period
Arabis cobrensis Masonic rock cress (Brassicaceae) herbaceous perennial			S1S2	L2 3-1-1	In Calif. only Bodie Hills, Glass Mtn., and Long Valley, Mono Co.; Panamint Mts., Inyo Co.; and Warner Mts., Modoc Co. In Nevada, Oregon to Wyoming. Reported adjacent to Benton Crossing Landfill.	4500-9200 (1375-2800 m) Sandy soils, Great Basin scurb and pinyon and juniper woodland. June-July.
Astragalus johannis-howellii Long Valley milk-vetch (Fabaceae) herbaceous perennial		R	S2.2	L1B 2-2-2	Only in Long Valley and Bodie Hills, Mono Co, Calif., and NW Mineral Co., Nev. Nearest location is within a quarter mile of Benton Crossing Landfill.	6700-8300 ft (2040-2530 m) Deep sandy loam with sagebrush on gently sloping alluvial basins or at the edge of open flats, one site on heavy soil. May-Aug.
Astragalus monoensis var. *monoensis* Mono milk-vetch (Fabaceae) herbaceous perennial		R	S2.2	L1B 2-2-3	From near Mono Craters and June Lake, SE to Casa Diablo and Benton Crossing, Mono Co. Nearest location is about 3 mi. NNW of Benton Crossing Landfill and 6 mi. S of Pumice Valley Landfill.	6900-11,000 ft (2110-3355 m) Open, dry pumice flats of sand and gravel, and on road cuts. Sometimes with sagebrush scrub. June-Aug.
Lupinus duranii Mono Lake lupine (Fabaceae) herbaceous perennial			S2.2	L1B 2-2-3	Mono Basin, from near Lundy Lake, SE to near Casa Diablo, Mono Co. Nearest location is about 8 mi. W of Benton Crossing Landfill and within 2 mi. of Pumice Valley Landfill.	6500-8500 ft (2000-2550 m) Open, dry pumice flats of sand and gravel. Sometimes with sagebrush scrub. May-Aug.
Spartina gracilis alkali cord grass (Poaceae) herbaceous perennial			S3.2	L4 -2-1	Inyo and Mono Co., Calif. In Nevada, Oregon, N to British Columbia, E to Kansas. Nearest location within 1 mi. of Benton Crossing Landfill.	3300-6900 ft (1000-2100 m) Alkali meadows. June-Aug.

Rank or status abbreviations:

FWS (U.S. Fish and Wildlife Service) listings under the Endangered Species Act (CNDDB 2001): none listed.

DFG (California Department of Fish and Game) listings are (CNDDB 2001).: R - rare under the California Native Plant Protection Act

NDDB (California Natural Diversity Data Base, a section within DFG) ranks are (CNDDB 2001): S1= <6 EOs (element occurrences) or <1000 individuals or <2000 acres, S2= 6-20 EOs or 1000-3000 individuals or 2000-10,000 acres; S3= 21-100 EOs or 3000-10,000 individuals or 10,000-50,000 acres. A threat designation is sometimes expressed by a decimal followed by a 1 for very threatened, 2 for threatened, or 3 for no current threats known. Uncertainty about the rank of an element is expressed by designating the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.

Table 1. (continued) Plant species of concern with some potential to occur on the Mono County landfill expansion areas.

[1] Rank or status abbreviations: (continued)

CNPS (California Native Plant Society) ranks are (CNPS 2001): L1B= List 1B, plants rare, threatened or endangered in Calif. and elsewhere; L2= List 2, plants rare, threatened, or endangered in Calif., but more common elsewhere; and L4= List 4, plants of limited distribution - a watch list. The three numbers below are the R-E-D (rarity-endangerment-distribution) code. R code: 1= rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time; 2= distributed in a limited number of occurrences, occasionally more if each occurrence is small; 3= distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported. E code: 1= not endangered; 2= endangered in a portion of its range; 3= endangered throughout its range. D code: 1= more or less widespread outside Calif.; 2= rare outside Calif.; 3= endemic to Calif.

All five of the species appeared to have some potential to occur in the Benton Crossing Landfill expansion survey area. One of the species, Masonic rock cress (*Arabis cobrensis*), has been previously observed by Anne Halford, BLM Botanist, in May of 2000, just to the southeast of the Benton Crossing Landfill (A. Halford, pers. comm.). Long Valleymilk-vetch is known within a quarter mile of the site.. Alkali cord grass (*Spartina gracilis*) is known within one mile, although this species only occurs in alkali meadows. Mono milk-vetch and Mono Lake lupine (*Lupinus duranii*) are known farther away, the nearest known populations to Benton Crossing Landfill are approximately 3 and 8 miles away, respectively.

Only two of the Table 1 species appeared to have some potential to occur in the Pumice Valley Landfill expansion survey area. Mono Lake lupine has the closest known populations, within 2 miles to the north and east. Mono milk-vetch are known farther away, the nearest approximately six miles to the south.

Field surveys were conducted in the Benton Crossing expansion survey area on July 28, August 8, 13, 20 and 28, 2001 and in the Pumice Valley expansion survey area on August 14, 2001 by Mark Bagley and Stephen Ingram. Surveys were conducted by systematically walking parallel transects over the survey areas. In the Benton Crossing Landfill expansion survey area, transects were spaced 27.5 to 55 feet apart, with the exception that areas covered with refuse were not systematically surveyed (Figure 1). The more intensive transect spacing was done in areas where species of concern populations were found to occur. The perimeter of the refuse areas were walked and some meandering transects were walked over part of the areas. In the Pumice Valley expansion survey area, transects were spaced 50 feet apart on the north, south and west sides of the area and 60 feet apart on the east side (Figure 2).

Transects were located using a handheld compass and by pacing from the perimeter fencing established around existing landfill areas. The existing property boundary that lies north and east of the perimeter fence at Benton Crossing Landfill was marked by several existing posts. Field surveys were floristically based, that is all parts of the study area were surveyed and all plant species encountered in the survey area were identified to at least genus and to the level necessary to ensure that they were not plant species of concern. A list of all

plant species encountered was recorded. Plant communities were classified according to the old California Natural Diversity Data Base system (Holland 1986).

On July 28, 2001, known populations of Long Valley milk-vetch, Mono milk-vetch and Mono Lake lupine were observed just prior to commencing surveys in the Benton Crossing Landfill expansion survey area. Long Valley milk-vetch were observed in the general vicinity of Whitmore Hot Springs, about 4 miles SSW of the landfill; plants were in fruit and most were starting to dry out, turning brown and losing leaves. Many of the plants showed no sign of flowering or fruiting this season, perhaps conditions were too dry. Mono milk-vetch and Mono Lake lupine were observed in Smokey Bear Flat, about 8 miles west of the landfill; these plants were in bud, flower and fruit, with no sign of drying out yet. These observations indicated that the survey timing was appropriate to determine if these species occur within the expansion survey areas.

RESULTS

Benton Crossing Landfill

Vegetation and Habitat Types. One natural vegetation community type, big sagebrush scrub, occurs in the Benton Crossing Landfill expansion survey area (Figure 3). Big sagebrush scrub is widely distributed in the eastern Sierra Nevada, through the Modoc Plateau and eastward throughout the Great Basin (Holland 1986). This is an open, shrub dominated type, dominated by Great Basin or big sagebrush *(Artemisia tridentata)*, typically with much bare ground under and between the shrubs. The majority of the survey area consists of a low diversity big sagebrush scrub, very strongly dominated by big sagebrush, with scattered antelope bitterbrush (*Purshia tridentata*) and very little or no understory. Occasional curl leaf rabbitbrush (*Chrysothamnus viscidiflorus*), thorny skeleton-plant (*Stephanomeria spinosa*), and lupine (*Lupinus argenteus*) are the most common associates. Soils are loose and sandy. Throughout most of the area the mature big sagebrush are about 1-1.5 m tall, but in the large draw in the northeast and in a swale on the south side of the landfill the sagebrush are about 2-2.5 m tall forming a very dense cover with almost no understory or associated shrubs. To the west and south of the existing landfill, the big sagebrush scrub is generally a little more diverse than it is to the north, still strongly dominated by big sagebrush, but with an increase in the associated shrubs and understory species. Antelope bitterbrush and curl leaf rabbitbrush appear to increase slightly in abundance and are joined by occasional gray horsebrush (*Tetradymia canescens*), sulfer flower (*Eriogonum umbellatum*) and prickly phlox (*Leptodactylon pungens*), along with several understory herbs including thorny skeleton-plant, lupine, ricegrass (*Achnatherum hymenoides*), western needlegrass (*Achnatherum occidentalis*), big squirreltail (*Elymus elymoides*), ashy wildrye (*Leymus cinereus*), and two species of concern, Long Valley milk-vech and Masonic rock cress (discussed below).

In two places, southwestern portions of the survey area extend down nearly to the base of a steep slope that borders wetland alkali flats just to the north of Big Alkali Lake. These two areas are designated "transitional" on the vegetation map (Figure 3) because scattered saltgrass (*Distichlis spicata*), needle-and-thread grass (*Hesperostipa comata*) and rubber rabbitbrush (*Chrysothamnus nauseosus*) occur in the big sagebrush scrub indicating

increased soil moisture and the transition of the vegetation towards the alkali meadow type that occurs further west of the survey area.

Disturbed/cleared habitats occur adjacent to the north and southwest parts of the existing landfill (Figure 3). These areas have been cleared of native vegetation in the past and are now sparsely covered with big sagebrush, rubber rabbitbrush and curl leaf rabbitbrush. More herbs occur here than in the adjacent undisturbed sagebrush, including lupine, Russian-thistle (*Salsola* sp.), thorny skeleton-plant, Bailey buckwheat (*Eriogonum baileyi*), cryptantha (*Cryptantha* sp.), Nuttall tiquilia (*Tiquilia nuttallii*), and tansy-mustard (*Descurainia sophia*).

Two areas adjacent to the disturbed/cleared areas have also been cleared of native vegetation and are largely covered by refuse that has been dumped on the sites. These are designated "refuse areas" (Figure 3). In the larger northern area the refuse consists primarily of large tree stumps, broken asphalt and concrete, and other building debris. In the southwest the refuse is primarily wrecked cars and other metal objects. Plants that occur in these areas are principally big sagebrush and rubber rabbitbrush.

No sensitive or specially protected vegetation types occur in the Benton Crossing Landfill expansion survey area.

Flora. A list of all plant taxa encountered within the survey area was compiled by habitat type (Table 2). Plants occurring in the areas mapped as big sagebrush scrub and transition are listed under big sagebrush scrub in the table, those in areas mapped as disturbed/cleared and refuse areas are listed under disturbed habitat. A total of 38 taxa, occurring in 14 plant families, were observed in the survey area. Only four of the taxa are non-native and all occurred only in disturbed habitat. Twenty-five taxa occur in big sagebrush scrub. Although strongly dominated by big sagebrush, 7 other shrubs or subshrubs occur in this type along with 14 herbaceous perennials and 3 annuals. Only six of these 25 taxa also occur in disturbed habitat. Nineteen taxa occur in disturbed habitat; including 4 shrubs, 4 herbaceous perennials, 1 biennial, and 10 annuals.

Plant Species of Concern. Two plant species of concern were found to occur in the Benton Crossing Landfill expansion survey area. Long Valley milk-vetch (*Astragalus johannis-howellii*) and what appears to be Masonic rock cress (*Arabis cobrensis*) were found to occur mainly in the western and southern portions of the survey area, generally in areas with the slightly more diverse big sagebrush scrub.

Long Valley milk-vetch is endemic to Mono County and is state-listed as rare. A total of 530 individuals were observed in the survey area, all but one occur west and south of the existing landfill (Figure 4). Nearly all of the individuals occur in the open, between the shrub canopies. Only three were noted as occurring under a shrub canopy. Nearly all were going dormant, with reddish stems, mostly brown leaves and leaflets falling. There was little sign of flowering this season. A few plants were still green and in the vegetative stage, particularly the few that occurred in disturbed areas. Three plants occur in the disturbed/cleared area mapped in the southwest part of the survey area (Figure 3) and eight in a little dirt access road (not mapped) just south of the fence line on the south side of the

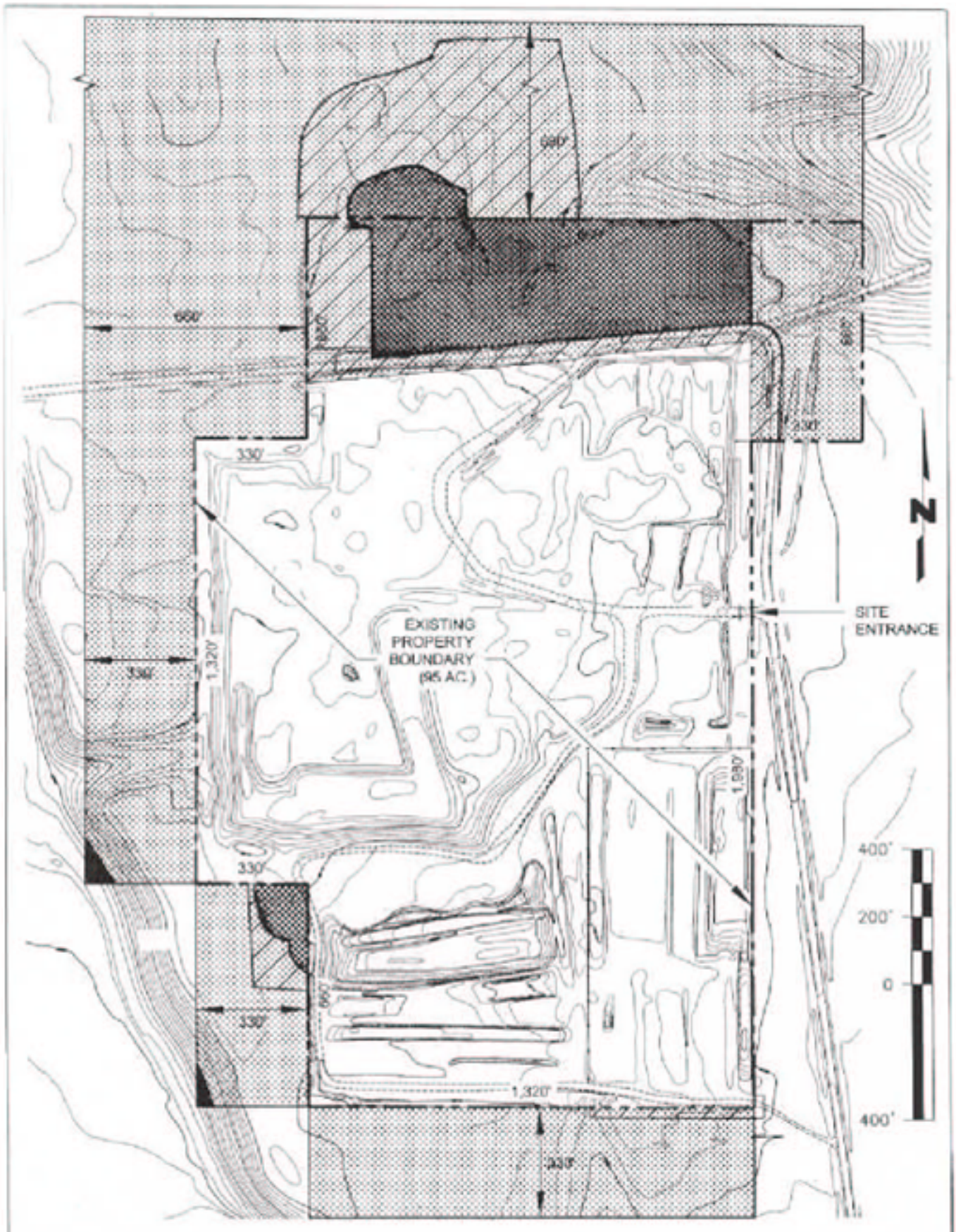

Figure 3. Vegetation and habitat types in the Benton Crossing Landfill expansion survey area.

big sagebrush scrub | transitional | disturbed/cleared areas | refuse areas

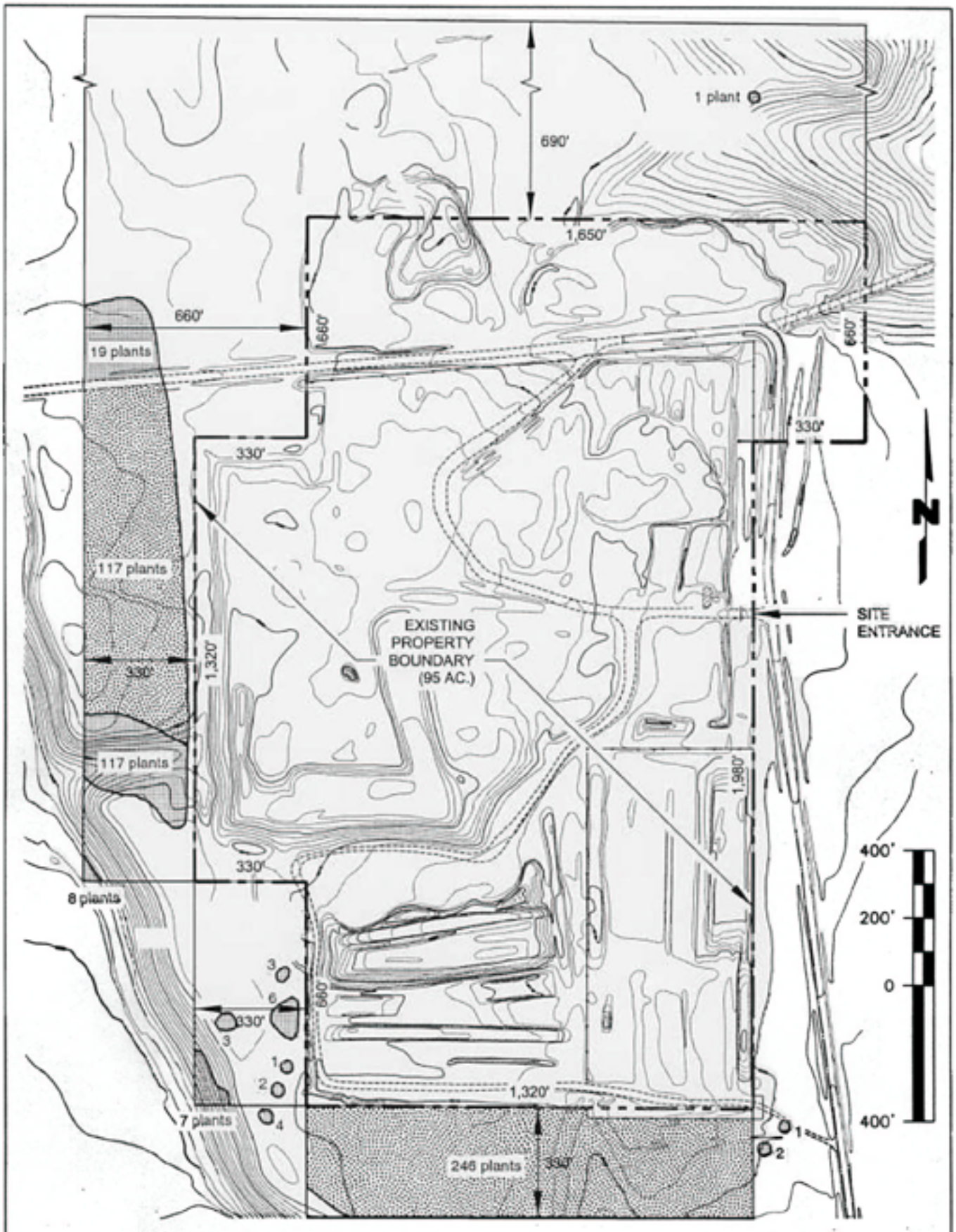

Figure 4. Distribution and abundance of Long Valley milk-vetch (*Astragalus johannis-howellii*) in the Benton Crossing Landfill expansion survey area.

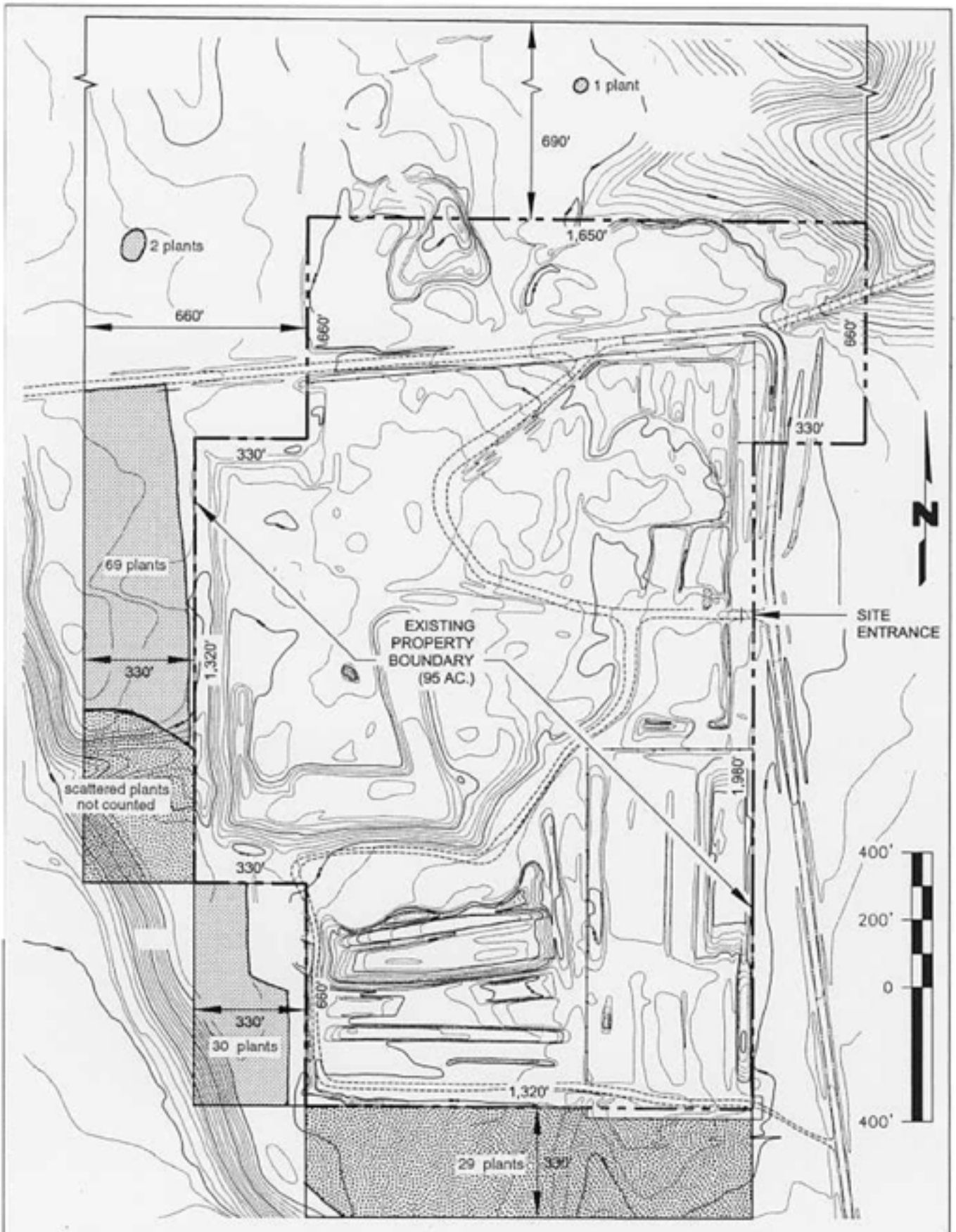

Figure 5. Distribution and abundance of Masonic rock cress (*Arabis cobrensis*) in the Benton Crossing Landfill expansion survey area.

landfill. Even though nearly all were dormant, the Long Valley milk-vetch were relatively easy to observe in the open understory of the sagebrush scrub.

Masonic rock cress is not state or federally-listed, but is considered by the California Native Plant Society as rare, threatened, or endangered in California, but more common elsewhere out of state. Identification of this species needs confirmation because specimens observed in 2001 were dry, with few leaves, and only open fruit with no seeds. The dry rock cress observed in the survey were identified as Masonic rock cress based on the linear or linear-oblanceolate, entire basal leaves, the widely arched pedicel with pendent fruit, and the previous report of Masonic rock cress very near the survey area (A. Halford, BLM Botanist, pers. comm.).

A total of 131 individuals of Masonic rock cress were counted in the survey area (Figure 5). However, in the first area where it was observed, noted on Figure 5, individuals were not counted. Nearly all of the Masonic rock cress were observed growing up through shrub conopies; because of this and the fact the plants were dormant and dry at the time of the survey it appears likely that this species was under counted. Masonic rock cress were generally found to occur west and south of the landfill, in areas that also support Long Valley milk-vetch. Only three individuals were observed north of the road bordering the existing fenced landfill area.

Of the five species of concern identified as having some potential to occur in the survey area prior to conducting the survey (Table 1), three were not observed. All should have been observable during the survey period and it appears that habitats that could support these species do not occur in the Benton Crossing Landfill expansion survey area.

Pumice Valley Landfill

Vegetation. Big sagebrush scrub is the only vegetation type that occurs in the Pumice Valley Landfill expansion survey area. Big sagebrush scrub is widely distributed in the eastern Sierra Nevada, through the Modoc Plateau and eastward throughout the Great Basin (Holland 1986). The majority of the survey area consists of a low diversity big sagebrush scrub, very strongly dominated by big sagebrush *(Artemisia tridentata)*, with scattered antelope bitterbrush (*Purshia tridentata*) and a sparse understory of native annual herbs. The shrubs are generally large, about 1.5-2 m tall. The only other shrub species is an occasional desert peach (*Prunus andersonii*). Common understory associates includeWilcox woolly star (*Eriastrum wilcoxii*), Bailey buckwheat (*Eriogonum baileyi*), capped cryptantha (*Cryptantha circumscissa*), and Nuttall tiquilia (*Tiquilia nuttallii*). Soils are loose, sandy pumice.

Areas of disturbance occur in the survey area along the landfill perimeter fence, the graded landfill access road, and several small dirt roads that cross the area. These areas have been cleared and now are mostly open with scattered very small big sagebrush and occasional small antelope bitterbrush. The more common scattered, often patchy annuals

include Bailey buckwheat, spurry buckwheat (*Eriogonum spergulinum* var *reddingianum*), Russian thistle (*Salsola* sp.), and diffuse gayophytum (*Gayophytum diffusum*).

No sensitive or specially protected vegetation types occur in the Pumice Valley Landfill expansion survey area.

Flora. A list of all plant taxa encountered within the survey area was compiled by habitat type (Table 3). A total of only 18 taxa, occurring in 11 plant families, were observed in the survey area. Only two of the taxa are non-native, both common desert weeds. Fifteen taxa occur in big sagebrush scrub. Strongly dominated by big sagebrush, only two other shrub species occur in this type along with 12 annual herbs. Eleven of these 15 taxa also occur in disturbed habitat. A total of 14 taxa occur in disturbed habitat; including 2 shrubs and 12 annual herbs.

Plant Species of Concern. No federal or state-listed or proposed rare, threatened or endangered plant species were observed in the survey area, nor were there any species listed by the California Native Plant Society (Skinner and Pavlik 1994), nor were there any other plant species otherwise considered sensitive or species of concern.

Prior to conducting the survey, two species of concern, Mono milk-vetch and Mono Lake lupine, were identified as having some potential to occur in the Pumice Valley survey area. These should have been observable during the survey period and it appears that habitats that could support these species do not occur in the Pumice Valley Landfill expansion survey area.

DISCUSSION

Benton Crossing Landfill

Potential Project Impacts to Vegetation. No sensitive or specially protected vegetation types occur in the Benton Crossing Landfill expansion survey area. Only big sagebrush scrub, a common and widespread community type, and disturbed habitats occur in the survey area. The project will potentially affect only a very small portion of the thousands of acres of this vegetation type that occur in the project vicinity. Potential project impacts to big sagebrush scrub would therefore be considered less-than-significant.

Although no sensitive vegetation types occur in the Benton Crossing landfill expansion survey area, southwestern portions of the survey area extend down a steep slope nearly to the margin of wetland alkali flats just north of Big Alkali Lake. This is where the two small areas designated as "transitional" are located (Figure 3). Expansion of the landfill down this slope could potentially have adverse impacts on the adjacent wetland due to possible erosion and runoff problems. Any adverse impacts to the wetlands would likely be considered significant.

Potential Project Impacts to Plant Species of Concern. Two plant species of concern were found to occur in the Benton Crossing Landfill expansion survey area. Long

Valley milk-vetch (*Astragalus johannis-howellii*) and what appears to be Masonic rock cress (*Arabis cobrensis*) were found to occur mainly in the western and southern portions of the survey area. Thorough surveys of the project area were conducted in the latter part of the growing season, when all plants observed were identifiable. No other plant species of concern were found to occur within the survey area, none have been previously reported on the site, and none are expected to occur there.

Long Valley milk-vetch is endemic to Mono County and is state-listed as rare. A sizable population of 530 plants occurs in the survey area. Substantial adverse impacts to a state-listed rare plant would be considered a significant impact under the California Environmental Quality Act (CEQA). Both Alisa Ellsworth, California Department of Fish and Game Biologist in Bishop, and Paula Hubbard, LADWP Biologist, were consulted in August and September 2001 on the project's potential affect on Long Valley milk-vetch. Both biologists suggested that impacts to populations of this species should be avoided. CEQA Guidelines (Sec. 15021.a) state that CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible.

A fairly large population of over 131 individuals of Masonic rock cress occurs in the survey area. Specimens observed in 2001 were dormant, but were identified as Masonic rock cress based on observable leaf, pedicel and fruit characters, and the previous report of Masonic rock cress very near the survey area (A. Halford, BLM Botanist, pers. comm.). If necessary, identification of this species could be confirmed by looking at specimens during the growing season when fruits are present, typically mid to late June.

Masonic rock cress is not state or federally listed, but is listed by the California Native Plant Society on List 2: plants rare, threatened, or endangered in California, but more common elsewhere. There are few confirmed records of this species in California and it may be more widespread than is known due to lack of searching for it (A. Halford, pers. comm.). However, according to CNPS (2001), plants on their List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. Under CEQA, if plants can be shown to meet these definitions they must be considered the same as state-listed species during preparation of environmental documents (CEQA Guidelines Sec. 15380.d). Additionally, the California Department of Fish and Game recognizes that CNPS List 2 species may qualify for listing, and the Department recommends they be addressed in CEQA projects (Morey and Ikeda 2001). In the expansion survey area Masonic rock cress were found to occur scattered with Long Valley milk-vetch; if impacts to the state-listed milk-vetch are avoided, impacts to the rock cress will also be avoided.

If expansion at Benton Crossing Landfill occurs only to the north, only a couple of isolated individuals of Long Valley milk-vetch and Masonic rock cress would be impacted. It would be difficult to argue that that would be a substantial impact on the species, thereby avoiding potential significant project affects to plant species of concern. However, if expansion were to occur to the west or south, there would be significant impacts to rare plant species.

Pumice Valley Landfill

Potential Project Impacts to Vegetation. No sensitive or specially protected vegetation types occur in the Pumice Valley Landfill expansion survey area. Only big sagebrush scrub, a common and widespread community type, and disturbed habitats occur in the survey area. The project will potentially affect only a very small portion of the thousands of acres of this vegetation type that occur in the project vicinity. Potential project impacts to big sagebrush scrub would therefore be considered less-than-significant.

Potential Project Impacts to Plant Species of Concern. Thorough surveys of the area were conducted in the latter part of the growing season, when all plants observed were identifiable. No plant species of concern were found to occur within the Pumice Valley Landfill expansion survey area, none have been previously reported on the site or within about two miles of the site, and none are expected to occur there. No impacts to any rare, threatened or endangered plant species, or other plant species of concern, would therefore be expected from the proposed project.

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Table 2. Plant species observed in the Benton Crossing Landfill expansion survey area, July 28-August 28, 2001 (nomenclature from Hickman 1993).

FAMILY [1] Species	Common Name	Big Sagebrush Scrub	Disturbed Habitat	Habit [2]
DICOT ANGIOSPERMS (FLOWERING PLANTS)				
ASTERACEAE	SUNFLOWER FAMILY			
Artemisia tridentata	big sagebrush	x	x	
Chaenactis douglasii	hoary chaenactis	x		
Chrysothamnus nauseosus	rubber rabbitbrush	x	x	s
Chrysothamnus viscidiflorus	curly-leafed rabbitbrush	x		
Crepis sp.	hawksbeard	x		
Stephanomeria exigua ssp. *exigua*	annual mitra			
Stephanomeria spinosa	thorny skeleton-plant	x	x	
Tetradymia canescens	gray horsebrush	x		
BORAGINACEAE	BORAGE FAMILY			
Cryptantha sp.	cryptantha		x	
Tiquilia nuttallii	Nuttall tiquilia		x	
BRASSICACEAE	MUSTARD FAMILY			
Arabis cf. cobrensis	Masonic rock cress	x		p
• *Descurainia sophia*	tansy-mustard		x	
• *Sisymbrium altissimum*	tumble-mustard		x	
CHENOPODIACEAE	GOOSEFOOT FAMILY			
Atriplex canescens	four-winged saltbush		x	
Chenopodium sp.	pigweed	x		
Grayia spinosa	spiny hopsage	x		
• *Salsola* sp.	Russian-thistle		x	
FABACEAE	LEGUME FAMILY			
Astragalus johannis-howellii	Long Valley milk-vetch	x	x	p
Astragalus purshii	Pursh milk-vetch	x		p
Lupinus argenteus var. *argenteus*	lupine	x	x	p
GROSSULARIACEAE	GOOSEBERRY FAMILY			
Ribes cereum	wax current		x	
LOASACEAE	LOASA FAMILY			
Mentzelia sp.	blazing star		x	a

[1] • = exotic (non-native) species

[2] habit: a = annual; b = biennial; p = perennial; ss = subshrub; s = shrub

Table 2. (continued) Plant species observed in the Benton Crossing Landfill expansion survey area, July 28-August 28, 2001 (nomenclature from Hickman 1993).

FAMILY Species [1]	Common Name	Big Sagebrush Scrub	Disturbed Habitat	Habit [2]
PAPAVERACEAE	POPPY FAMILY			
Argemone munita	prickly poppy		x	p
POLEMONIACEAE	PHLOX FAMILY			
Eriastrum sp.	wolly star	x		a
Leptodactylon pungens	prickly phlox	x		ss
Phlox stansburyi	Stansbury phlox	x		p
POLYGONACEAE	BUCKWHEAT FAMILY			
Chorizanthe brevicornu	brittle spineflower	x	x	a
Eriogonum baileyi var. *baileyi*	Bailey buckwheat		x	a
Eriogonum umbellatum	sulfer flower	x		s
ROSACEAE	ROSE FAMILY			
Purshia tridentata var. *tridentata*	antelope bitterbrush	x		
SCROPHULARIACEAE	FIGWORT FAMILY			
* *Verbascum thapsus*	woolly mullein		x	b
SOLANACEAE	NIGHTSHADE FAMILY			
Nicotiana attenuata	coyote tobacco		x	a
MONOCOT ANGIOSPERMS (FLOWERING PLANTS)				
POACEAE	GRASS FAMILY			
Achnatherum hymenoides	Indian ricegrass	x		p
Achnatherum occidentalis	western needlegrass	x		p
Distichlis spicata	saltgrass			p
Elymus elymoides	squirreltail	x		p
Hesperostipa comata	needle-and-thread grass			p
Leymus cinereus	basin wildrye	x		p

Table 3. Plant species observed in the Pumice Valley Landfill expansion survey area, August 14, 2001 (nomenclature from Hickman 1993).

FAMILY Species	Common Name	Big Sagebrush Scrub	Disturbed Habitat	Habit [2]
DICOT ANGIOSPERMS (FLOWERING PLANTS)				
ASTERACEAE	SUNFLOWER FAMILY			
Ambrosia acanthicarpa	annual bur-sage		x	a
Artemisia tridentata	big sagebrush	x	x	
Stephanomeria exigua ssp. *exigua*	annual mitra	x		a
BORAGINACEAE	BORAGE FAMILY			
Cryptantha circumscissa	cappped cryptantha	x	x	a
Tiquilia nuttallii	Nuttall tiquilia	x	x	
BRASSICACEAE	MUSTARD FAMILY			
• *Sisymbrium altissimum*	tumble-mustard		x	a
CHENOPODIACEAE	GOOSEFOOT FAMILY			
• *Salsola* sp.	Russian-thistle	x	x	a
HYDROPHYLLACEAE	WATERLEAF FAMILY			
Phacelia bicolor var. *bicolor*	sticky yellow-throats	x	x	a
LOASACEAE	LOASA FAMILY			
Mentzelia congesta	blazing star	x	x	a
ONAGRACEAE	EVENING PRIMROSE FAMILY			
Camissonia sp.	sun cup	x		a
Gayophytum diffusum	diffuse gayophytum	x	x	a
POLEMONIACEAE	PHLOX FAMILY			
Eriastrum wilcoxii	Wilcox woolly star	x		a
Gilia sp.	gilia	x	x	a
POLYGONACEAE	BUCKWHEAT FAMILY			
Eriogonum baileyi var. *baileyi*	Bailey buckwheat	x	x	a
Eriogonum spergulinum var. *reddingianum*	spurry buckwheat	x	x	a
ROSACEAE	ROSE FAMILY			
Prunus andersonii	desert peach			s
Purshia tridentata var. *tridentata*	antelope bitterbrush	x	x	s
SOLANACEAE	NIGHTSHADE FAMILY			
Nicotiana attenuata	coyote tobacco		x	a

[1] • = exotic (non-native) species

[2] habit: a = annual; s = shrub